

09/980953

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No.: **ISPH-0621**  
Inventors: **Bennett et al.**  
Serial No.: **09/980,953**  
Filing Date: **December 3, 2001**  
Examiner: **Not Yet Assigned**  
Group Art Unit: **Not Yet Assigned**  
Title: **Antisense Modulation of B7 Protein Expression**

"Express Mail" Label No. **EV106519468US**  
Date of Deposit **April 19, 2002**

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By *Jane Massey Licata*  
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Sir:

**INFORMATION DISCLOSURE STATEMENT**

Pursuant to 37 C.F.R. §1.56 and in accordance with 37 C.F.R. §§1.97-1.98, information relating to the above-identified application is hereby disclosed. Inclusion of information in this statement is not to be construed as an admission that this information is material as that term is defined in 37 C.F.R. §1.56(b).

**(XX)** In accordance with §1.97(b), since this Information Disclosure Statement is being filed either within three months of the filing date of the above-identified

application, within three months of the date of entry into the national stage of the above identified application as set forth in §1.491, or before the mailing date of a first Office Action on the merits of the above-identified application, no additional fee is required.

( ) In accordance with §1.97(c), this Information Disclosure Statement is being filed after the period set forth in §1.97(b) above but before the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311, therefore:

( ) Certification in Accordance with §1.97(e) is set forth below; or

( ) The fee of \$180.00 as set forth in §1.17(p) is attached.

( ) In accordance with §1.97(d), this Information Disclosure Statement is being filed after the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311 but before the payment of the Issue Fee, therefore included are: Certification in Accordance with §1.97(e); Petition Requesting Consideration of the Information Disclosure Statement; and the fee of \$130.00 as set forth in §1.17(i) (1).

( ) Copies of each of the references listed on the attached Form PTO-1449 (modified) are enclosed herewith.

(**XX**) In accordance with §1.98(d), copies of some or all of the references listed on the attached Form PTO-1449 (modified)

are not enclosed herewith because they were previously submitted to the U.S. Patent and Trademark Office in prior application Serial No. 09/326,186, filed June 4, 1999, for which a claim for priority under 35 U.S.C. §120 has been made in the instant application.

Please charge any deficiency or credit any overpayment to Deposit Account No. 50-1619. This form is submitted in duplicate.

( ) The relevance of the listed references in a foreign language is as stated in the specification at pages @@.

(XX) All listed references are in the English language.

Respectfully submitted,



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Date: April 19, 2002

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<b>Form PTO-1449 Modified</b>  List of Patents and Publications Cited by Applicant (Use several sheets if necessary)  U.S. Department of Commerce		Docket No. <b>ISPH-0621</b>	Serial No. <b>09/980,953</b>
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<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>			
	AA	Alberts et al., "Molecular Biology of the Cell", 1983, Garland Publishing Inc., New York, pp. 411-415	
	AB	Allison et al., "The Yin and Yang of T Cell Costimulation", <i>Science</i> , 1995, 270, 932-933	
	AC	Allison, J.P., "CD28-B7 interactions in T-cell activation", <i>Curr. Opin. Immunol.</i> , 1994, 6, 414	
	AD	Azuma et al., "B70 antigen is a second ligand for CTLA-4 and CD28", <i>Nature</i> , 1993, 366, 76-79	
	AE	Berkow et al., eds., "The Merck Manual of Diagnosis and Therapy", 15th Ed., 1987, Rahway, N.J., pages 302-336 and 2516-2522	
	AF	Borriello et al., "Characterization of the Murine B7-1 Genomic Locus Reveals an Additional Exon Encoding an Alternative Cytoplasmic Domain and a Chromosomal	
	AG	Borriello et al., "Differential Expression of Alternate mB7-2 Transcripts", <i>J. Immunol.</i> , 1995, 155, 5490-5497	
	AH	Brigstock et al., "Species-Specific High Molecular Weight Forms of Basic Fibroblast Growth Factors", <i>Growth Factors</i> , 1990, 4, 45-52	
	AI	Charachon et al., "Phosphorothioate Analogues of (2'-5')(A) <sub>4</sub> : Agonist and Antagonist Activities in Intact Cells", <i>Biochemistry</i> , 1990, 29, 2550-2555	
<b>EXAMINER</b>		<b>DATE CONSIDERED</b>	

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	AJ	Chen et al., "Monoclonal Antibody 2D10 Recognizes a Novel T Cell Costimulatory Molecule on Activated Murine B Lymphocytes", <i>J. Immunol.</i> , 1994, 152, 2105-2114	
	AK	Chen et al., "Molecular Cloning and Expression of Early T Cell Costimulatory Molecule-1 and its Characterization as B7-2 Molecule", <i>J. Immunol.</i> , 1994,	
	AL	Crooke et al., eds., "Antisense Research and Applications", CRC Press, Boca Raton, 1993, pp. 171-172	
	AM	Crooke et al., "Pharmokinetic Properties of Several Novel Oligonucleotide Analogs in mice", <i>J. Pharmacol. Exp. Ther.</i> , 1996, 277, 923-937	
	AN	DeVirgilio et al., "Cloning and Disruption of a Gene Required for Growth on Acetate but not on Ethanol: the Acetyl-Coenzyme A Synthetase Gene of <i>Saccharomyces</i>	
	AO	Dulbecco et al., "Plaque Production by the Polyoma Virus", <i>Virol.</i> , 1959, 8, 396-397	
	AP	Freeman et al., "Cloning of B7-2: A CTLA-4 Counter-Receptor That Costimulates Human T Cell Proliferation", <i>Science</i> , 1993, 262, 909-911	
	AQ	Freeman et al., "B7, A New Member of the Ig Superfamily with Unique Expression on Activated and Neoplastic B Cells", <i>J. Immunol.</i> , 1989, 143, 2714-2722	
	AR	Freeman et al., "Structure, Expression, and T Cell Costimulatory Activity of the Murine Homologue of the Human B Lymphocyte Activation Antigen B7", <i>J. Exp.</i>	
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	AS	French et al., "Express of Two Related Nonstructural Proteins of Bluetongue Virust (BTV) Type 10 in Insect Cells by a Recombinant Baculovirus: Production of Polyclonal Ascitic Fluid and Characterization of the Gene Product in BTV-Infected BHK Cells", <i>J.</i>	
	AT	Gebeyehu, G., et al., "Novel biotinylated nucleotide - analogs for labeling and colorimetric detection of DNA", <i>Nucleic Acids Res.</i> , 1987, 15, 4513-4534	
	AU	Gelbert et al., "Analysis of GPT Activity in Mammalian Cells with a Chromosomally Integrated Shuttle Vector Containing Altered <i>gpt</i> Genes", <i>Somat. Cell. Mol.</i>	
	AV	Gold and Stormo, in: <i>Escherichia coli and Salmonella typhimurium: Cellular and Molecular Biology</i> , Vol. 2, 1987	
	AW	Hakim et al., "Acute Graft-Versus-Host Reaction Can be Aborted by Blockade of Costimulatory Molecules", <i>J. Immun.</i> , 1995, 155, 1760-1766	
	AX	Harlan et al., "Mice expressing both B7-1 and viral glycoprotein on pancreatic beta cells along with glycoprotein-specific transgenic T cells develop diabetes due to a breakdown of T-lymphocyte unresponsiveness", <i>Proc. Natl. Acad. Sci. U.S.A.</i> , 1994, 91, 3137-	
	AY	Hathcock et al., "Identification of an Alternative CTLA-4 Ligand Costimulatory for T Cell Activation", <i>Science</i> , 1993, 262, 905-907	
	AZ	Inobe et al., "The Role of the B7-1a Molecule, an Alternatively Spliced Form of Murine B7-1 (CD80), on T Cell Activation", <i>J. Immun.</i> , 1996, 157, 582-588	
	BA	Jellis et al., "Genomic Organization of the gene coding for the costimulatory human B-lymphocyte antigen B7-2 (CD86)", <i>Immunogenet.</i> , 1995, 42, 85	
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	BB	June et al., "The B7 and CD28 receptor families", <i>Immunol. Today</i> , 1994, 15, 321-331	
	BC	Kabanov et al., "A new class of antivirals: antisense oligonucleotides combined with a hydrophobic substituent effectively inhibit influenza virus reproduction and	
	BD	Kanagasundaram et al., "Isolation and characterization of the gene encoding gluconolactonase from <i>Zymomonas</i> <i>mobilis</i> ", <i>Biochim. Biophys. Acta</i> , 1992, 1171, 198-200	
	BE	Kornberg, A., DNA Replication, 1974, W.H. Freeman & Co., San Francisco, 1974, pp. 75-77	
	BF	Lenschow et al., "Long-Term Survival of Xenogeneic Pancreatic Islet Grafts Induced by CTLA4Ig", 1992, <i>Science</i> , 257, 789-792	
	BG	Lenschow et al., <i>Curr. Opin. Immunol.</i> , 1993, 5(5), 747- 52	
	BH	Lenschow et al., "Expression and functional significance of an additional ligand for CTLA-4", <i>Proc. Natl. Acad.</i> <i>Sci. U.S.A.</i> , 1993, 90, 11054-11058	
	BI	Letsinger et al., "Cholesteryl-conjugated oligonucleotides: Synthesis, properties, and activity as inhibitors or replication of human immunodeficiency	
	BJ	Levine et al., "Antiviral Effect and Ex Vivo CD4 <sup>+</sup> T Cell Proliferation in HIV-Positive Patients as a Result of CD28 Costimulation", <i>Science</i> , 1996, 272, 1939-1942	
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	BK	Lin et al., "Long-Term Acceptance of Major Histocompatibility Complex Mismatched Cardiac Allografts Induced by CTLA4Ig Plus Donor-specific Transfusion", <i>J.</i>	
	BL	Linsley et al., "CTLA-4 Is a Second Receptor for the B Cell Activation Antigen B7", <i>J. Exp. Med.</i> , 1991, 174, 561-569	
	BM	Linsley et al., "Immunosuppression in Vivo by a Soluble Form of the CTLA-4 T Cell Activation Molecule", <i>Science</i> , 1992, 257, 792-795	
	BN	Linsley and Ledbetter, "The Role of the CD28 Receptor During T Cell Responses to Antigen", <i>Annu. Rev. Immunol.</i> , 1993, 11, 191-212	
	BO	Liu and Linsley, "Costimulation of T-cell growth", <i>Curr. Opin. Immunol.</i> , 1992, 4, 265-270	
	BP	Manoharan et al., "Cholic Acid-Oligonucleotide Conjugates for Antisense Applications", <i>Bioorg. Med. Chem. Lett.</i> , 1994, 4, 1053-1060	
	BQ	Manoharan et al., "Oligonucleotide Conjugates: Alteration of the Pharmacokinetic Properties of Antisense Agents", <i>Nucleosides &amp; Nucleotides</i> , 1995, 14,	
	BR	Manoharan et al., "Chemical Modifications to Improve Uptake and Bioavailability of Antisense Oligonucleotides", <i>Ann. N.Y. Acad. Sci.</i> , 1992, 660, 306-	
	BS	Manoharan et al., "Lipidic Nucleic Acids", <i>Tetrahedron Lett.</i> , 1995, 36, 3651-3654	
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	BT	Manoharan et al., "Introduction of a Lipophilic Thioether Tether in the Minor Groove of Nucleic Acids for Antisense Applications:", <i>Bioorg. Med. Chem. Let.</i> ,	
	BU	Markussen et al., "Translational control of oskar generates Short OSK, the isoform that induces pole plasm assembly", <i>Development</i> , 1995, 121, 3723-3732	
	BV	Martin et al., "Ein neuer Zugang zu 2'-O-Alkyribonucleosiden und Eigenschaften deren Oligonucleotide", <i>Helv. Chim. Acta</i> , 1995, 78, 486-504	
	BW	McDermott et al., "Structure and lens expression of the gene encoding chicken $\beta$ A3/A1-crystallin", <i>Gene</i> , 1992, 117, 193	
	BX	Mishra et al., "Improved leishmanicidal effect of phosphorotioate antisense oligonucleotides by LDL-mediated delivery", <i>Biochim. Biophys. Acta</i> , 1995, 1264,	
	BY	Monaco et al., "Structure of Two Rat Genes Coding for Closely Related Rolipram-sensitive cAMP Phosphodiesterases", <i>J. Biol. Chem.</i> , 1994, 269, 347-357	
	BZ	Moore et al., "Cell Line Derived from Patient with Myeloma", <i>N.Y. J. Med.</i> , 1968, 68, 2054-2060	
	CA	Nabavi et al., "Signalling through the MHC class II cytoplasmic domain is required for antigen presentation and induces B7 expression", <i>Nature</i> , 1992, 360, 266-268	
	CB	Gao et al., "Cloning and Characterization of a Mouse Gene with Homology to the Human von Hippel-Lindau Disease Tumor Suppressor Gene: Implications for the Potential Organization of the Human von Hippel-	
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	CC	Nielsen et al., "Sequence-Selective Recognition of DNA by Strand Displacement with a Thymine-Substituted Polyamide", <i>Science</i> , 1991, 254, 1497-1500	
	CD	Oberhauser et al., "Effective incorporation of 2'-O-methyl-oligoribonucleotides into liposomes and enhanced cell association through modification with	
	CE	Olsen et al., "Inhibition of Protein Kinase-A by Overexpression of the Cloned Human Protein Kinase Inhibitor", <i>Mol. Endocrinol.</i> , 1991, 5, 1246-1256	
	CF	Perri et al., "Interactions of Plasmid-encoded Replication Initiation Proteins with the Origin of DNA Replication in the Broad Host Range Plasmid RK2", <i>J.</i>	
	CG	Pushpa-Rekha et al., "Rat Phospholipid-hydroperoxide Glutathione Peroxidase", <i>J. Biol. Chem.</i> , 1995, 270, 26993	
	CH	Reiser et al., "Murine B7 antigen provides an efficient costimulatory signal for activation of murine T lymphocytes via the T-cell", <i>Proc. Natl. Acad. Sci.</i>	
	CI	Rogers et al., "Alternative splicing dictates translational start in Epstein-Barr virus transcripts", <i>EMBO J.</i> , 1990, 9, 2273-2277	
	CJ	Romani et al., "Proliferating Dendritic Cell Progenitors in Human Blood", <i>J. Exp. Med.</i> , 1994, 180, 83-93	
	CK	Saison-Behmoaras et al., "Short modified antisense oligonucleotides directed against Ha-ras point mutation induce selective cleavage of the mRNA and inhibit T24	
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	CL	Sambrook et al., <i>Molecular Cloning. A Laboratory Manual</i> , Cold Spring Harbor Laboratory Press, 1989, Volume 2, pg. 10.59-10.61	
	CM	Sambrook et al., "Molecular Cloning. A Laboratory Manual," Cold Spring Harbor Laboratory Press, 1989, Volume 2, pg. 11.31-11.32	
	CN	Saul et al., "celB, a Gene Coding for a Bifunctional Cellulase from the Extreme Thermophile <i>Caldocellum saccharolyticum</i> ", <i>Appl. Environ. Microbiol.</i> , 1990, 56,	
	CO	Sawai, H., "Synthesis and Properties of Some New 2-5A Analogues", <i>Chemica Scripta</i> , 1986, 21, 169-172	
	CP	Shea et al., "Synthesis, hybridization properties and antiviral activity of lipid-oligodeoxynucleotide conjugates", <i>Nucl. Acids Res.</i> , 1990, 18, 3777-3783	
	CQ	Smith et al., "The Nucleic Acid of Polyoma Virus" <i>Virology</i> , 1960, 12, 185-196	
	CR	Stepkowski et al., "Blocking of Heart Allograft Rejection by Intercellular Adhesion Molecule-1 Antisense Oligonucleotides Alone or in Combination with Other	
	CS	Svinarchuk et al., "Inhibition of HIV proliferation in MT-4 cells by antisense oligonucleotide conjugated to lipophilic groups", <i>Biochimie</i> , 1993, 75, 49-54	
	CT	Wu et al., "A Major Costimulatory Molecule on Antigen-presenting Cells, CTLA4 Ligand A, Is Distinct from B7", <i>J. Exp. Med.</i> , 1993, 178, 1789-1793	
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	CU	Yang et al., "CD40 Ligand-Dependent T Cell Activation: Requirement of B7-CD28 Signaling Through CD40", <i>Science</i> , 1996, 273, 1862-1864	
	CV	Yaoita et al., "Xenopus laevis $\alpha$ and $\beta$ thyroid hormone receptors", <i>Proc. Natl. Acad. Sci. USA</i> , 1990, 87, 7090-7094	
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